



Building 911C  
P.O. Box 5000  
Upton, NY 11973-5000  
Phone 631 344-4531  
Fax 631 344-5954  
hershcovitch@bnl.gov

## Memo

*DATE:* November 12, 2004

*TO:* RHIC E-Coolers

*FROM:* *Ady Hershcovitch*

*SUBJECT:* **Minutes of the November 12, 2004 Meeting**

Present: Ilan Ben-Zvi, Rama Calaga, Peter Cameron, Xiangyun Chang, Alexei Fedotov, Wolfram Fischer, Ady Hershcovitch, Jorg Kewisch, Vladimir Litvinenko, Derek Lowenstein, William Mackay, Nikolay Malitsky, Thomas Roser, Dejan Trbojevic, Gang Wang (SUNY Stony Brook), Jie Wei.

Topics discussed: Diamond Cathode, Experiments at CELSIUS and ESR

**Diamond Cathode:** Xiangyun opened the meeting with updates on his electron gun cathode talk from the October 29, 2004 meeting. That talk was about a cathode based on diamond amplification of photo-emission electrons. It is basically an emission enhanced photo-injector. Xiangyun described some new features. To begin with, the gap can be made as large as a few centimeters. The back side of the cathode can be made from transparent thin metal and the laser light can be introduced either from the sides, or the laser light can be reflected off a mirror surface on the back side of the diamond. Xiangyun also presented new calculations of pulse length, attainable charge per bunch, and secondary electron temperature.

**Experiments at CELSIUS and ESR:** the meeting continued with a presentation by Alexei about planned experiments at CELSIUS in Uppsala Sweden and possibly at ESR in GSI Germany. The experiments are designed to determine the following:

1. Measure cooling force
2. Benchmark codes, especially the VORPAL, which is new tool
3. Measurements to benchmark new models of IBS required to accurately treat distribution shrinking as a consequence of cooling.
4. Simulate experimental conditions of high energy cooling
5. Study magnetized cooling and other issues like magnetic field errors
6. Study stability issues of cooled ion distribution

The first three topics were studied previously, but without the necessary accuracy (without the availability of VORPAL for example). New accurate studies are planned for next month. The 4<sup>th</sup> and 5<sup>th</sup> topics are designed to simulate high energy cooling conditions like in RHIC. Approval to conduct these studies is expected in January 2005 for studies to be conducted in the Spring of 2005.